



PATENT APPLICATION  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICATION OF	)	
TAKANORI CHIBA ET AL	)	GROUP NO.: 1711
SERIAL NUMBER: 09/807,322	)	
FILED: FEBRUARY 13, 2002	)	EXAMINER: J. M. COONEY
TITLE: METHOD OF PREPARING RIGID POLYURETHANE FOAM	)	

**APPEAL BRIEF**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Brief, submitted in triplicate, is an Appeal from the Final Action of the Examiner dated December 18, 2002 in which the rejections of Claims 5-14 (all of the pending claims) were maintained.

I hereby certify that this correspondence is being deposited  
with the United States Postal Service as first class mail in an  
enveloped addressed to: Commissioner for Patents,  
Alexandria, VA 22313-1450 5/19/03

Date

Lyndanne M. Whalen, Reg. No. 29,457

Name of applicant, assignee or Registered Representative

Signature

May 19, 2003

Date

I. REAL PARTY IN INTEREST

Each of the named inventors assigned his interest in this application to Bayer Aktiengesellschaft, a German corporation. Bayer Aktiengesellschaft is therefore the real party in interest in this Appeal.

II. RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences of which Appellants are aware that would be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 5-14 remain pending and are the subject of this Appeal.

Claims 1-4 were cancelled in the Preliminary Amendment filed with this application.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been made or requested subsequent to the Final Action of the Examiner.

V. SUMMARY OF THE INVENTION

The present invention relates to a process for the production of a rigid polyurethane foam in which an isocyanate is reacted with an isocyanate-reactive composition. (Claims 5-11) The isocyanate-reactive composition includes a polyester and/or polyether polyol which is poorly compatible with cyclopentane, water, a surfactant and a catalyst. A key feature of this process is the use of a dispersion of cyclopentane in the isocyanate-reactive composition.

The present invention also relates to an apparatus for dispersing the cyclopentane blowing agent in the isocyanate-reactive composition. (Claims 12-14) This apparatus includes a polyol tank, a high pressure circulating line and a static mixer. The static mixer must be present in the high pressure circulating line of the polyol tank.

VI. ISSUES

- A. Claims 5-11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by DE 19,708,570.
- B. Claims 12-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Barth et al (U.S. 4,275,172).

VII. GROUPING OF CLAIMS

- A. None of Claims 5-11 will be argued separately in response to ISSUE  
A. Claims 5-11 therefore stand or fall together with respect to ISSUE  
A.
- B. None of Claims 12-14 will be argued separately in response to ISSUE  
C. Claims 12-14 therefore stand or fall together with respect to ISSUE  
C.

## VIII. ARGUMENTS

- A. DE 19,708,570 does not disclose Appellants' invention as claimed in Claims 5-11 in the manner necessary to support a proper rejection under 35 U.S.C. § 102(b).

As has been the case throughout the prosecution of this application, Appellants' arguments are based upon the English translation of DE 19,708,570 which was supplied to the Examiner in response to the July 2, 2002 Office Action.

DE 19,708,570 discloses a process for the production of foam materials containing polyisocyanate polyaddition products with a foaming agent which includes a C<sub>3</sub> or C<sub>4</sub> ring.

The Examiner has argued that this reference

... discloses preparations of rigid foams from polyols blended with cyclopentane and water wherein the cyclopentane is dispersed in the polyol component before reaction in a manner which reads on the processes of the claims. (Office Action of July 2, 2002, at page 3, lines 3-5.)

Appellants respectfully disagree.

The **only** teaching in DE 19,708,570 with respect to combination of the blowing agent with the polyol is that solutions or emulsions containing foaming agents are produced by intensely mixing the polyol and blowing agent together. (See page 11, first full paragraph of the English translation.)

DE 19,708,570 does not teach a dispersion of cyclopentane in the polyol (i.e., isocyanate-reactive component). Appellants' invention requires a dispersion of cyclopentane (which clearly does not have a C<sub>3</sub> or C<sub>4</sub> ring) in the isocyanate-reactive component.

DE 19,708,570 does not therefore disclose Appellants' claimed invention in the manner necessary to support a proper rejection under 35 U.S.C. § 102(b).

Nor could one skilled in the art construe the teachings of DE 19,708,570 in any manner which would lead to Appellants' invention in which a dispersion of cyclopentane is used because DE 19,708,570 clearly teaches that it is the use of the required C<sub>3</sub> or C<sub>4</sub> ring hydrocarbon blowing agents to which the reportedly

improved properties are attributed. (See page 3, paragraphs 4-7 of the English translation.)

In fact, it is shown in the comparative Examples 1 and 6 of DE 19,708,570 that foams produced with cyclopentane as the blowing agent did **not** have the reported advantageous properties sought by the inventors of DE 19,708,570. DE 19,708,570 does **not** teach or suggest that different, more advantageous results would be obtained if cyclopentane were used in the form of dispersion.

Appellants' invention requires a dispersion of cyclopentane in the polyol. Cyclopentane is **not** a C<sub>3</sub> or C<sub>4</sub> ring hydrocarbon.

DE 19,708,570 does not therefore teach Appellants' claimed invention in the manner necessary to support a proper rejection under 35 U.S.C. § 102(b).

- B. Barth et al does not teach Appellants' invention as claimed in Claims 12-14 in the manner necessary to support a rejection under 35 U.S.C. § 102(b).

Barth et al discloses frothable thermosetting polyurethane-forming compositions. This reference is cited for its disclosure of an apparatus for blending reactive mixtures in polyurethane preparations.

Appellants are not, however, claiming an apparatus for blending isocyanate and polyol components of the type disclosed by Barth et al. Appellants are claiming an apparatus in which a polyol dispersion containing cyclopentane is produced. The polyol and cyclopentane are not being reacted. The cyclopentane is being dispersed in the polyol.

Further, the polyol tanks **29** and **30** shown in Figure 1 of Barth et al do not have the high pressure circulating line in which a static mixer is present that is required in Appellants' claimed invention.

Barth et al does not therefore teach Appellants' apparatus claimed in Claims 12-14 in the manner necessary to support a rejection under 35 U.S.C. § 102(b).

The Examiner has argued:

However, the reference as a whole teaches a static mixer to be in the line from the polyol feed tank to the reaction mold, and the system is under pressure. This disclosure is maintained from the position of

patentability to anticipate the apparatus defined by applicants claims without further limiting definition of the "high pressure circulating line" being provided in the claims. At page 4, lines 1-5 of the December 18, 2002 Office Action

Appellants would point out that the **only** static mixer disclosed by Barth et al is mixer **86**. Static mixer **86** is positioned between catalyst injector **76** and froth applicator **87**. Line **82** which feeds into catalyst injector **76** is the catalyst feed line. Line **75** which also feed into catalyst injector **76** is the **urethane** froth line.

Appellants' claimed device requires a static mixer in the high pressure circulating line for the polyol tank- **not** for a urethane froth as in the Barth et al reference.

The Examiner has argued that:

... applicant's statement of intended use is not seen to distinguish the claims from the apparatus disclosed by Barth et al. (At page 3, lines 2-4 of the Advisory Action dated March 3, 2003.)

Appellants' claims require a static mixer positioned in the high pressure circulating line of a polyol tank. Appellants maintain that the position of the components of an apparatus is **not** a statement of intended use as suggested by the Examiner.

The Examiner's argument regarding intended use does not therefore support the rejection of Appellants' Claims 12-14.

Appellants' claims do therefore clearly define an apparatus which is not disclosed by the Barth et al reference.

## IX. CONCLUSION

DE 19,708,570 does not disclose a cyclopentane/polyol dispersion. Nor does this reference indicate that cyclopentane would be suitable for use in the disclosed process if it were in the form of a dispersion. Appellants' invention (as claimed in Claims 5-11) which is based upon recognition of the fact that cyclopentane could be successfully used if it were dispersed in the isocyanate-reactive component is not

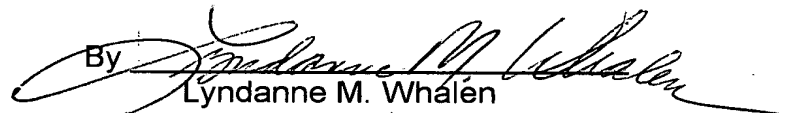
therefore anticipated by the teachings of DE 19,708,570.

Barth et al does not teach an apparatus in which a high pressure circulating line for a polyol tank having a static mixer positioned therein. Appellants' claimed apparatus (Claims 12-14) requires such positioning of such elements. Appellants' claimed apparatus is not therefore anticipated by the teachings of Barth et al.

Appellants therefore maintain that each of the Examiner's rejections is in error and respectfully request that each of these rejections be reversed and that Claims

5-14 be allowed.

Respectfully submitted,

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## APPENDIX - CLAIMS ON APPEAL

5. A process for preparing a rigid polyurethane foam comprising reacting
  - a) an organic polyisocyanate with
  - b) an isocyanate-reactive composition comprising
    - (i) a polyether polyol and/or a polyester polyol having poor compatibility with cyclopentane,
    - (ii) cyclopentane,
    - (iii) water,
    - (iv) a surfactant, and
    - (v) a catalystin which the cyclopentane is dispersed in the isocyanate-reactive composition.
6. The process of Claim 5 in which the cyclopentane is dispersed in a high pressure circulating line equipped with a static mixer.
7. The process of Claim 5 in which a polyether polyol is employed.
8. The process of Claim 7 in which the polyether polyol is the addition polymerization product of an initiator, ethylene oxide and propylene oxide.
9. The process of Claim 5 in which the solubility of cyclopentane in the polyol is less than or equal to 20 g in 100 g of polyol.
10. The process of Claim 5 in which the solubility of cyclopentane in the polyol is less than or equal to 10 g in 100 g of polyol.
11. The process of Claim 5 in which the solubility of cyclopentane in the polyol is less than or equal to 5 g in 100 g of polyol.



12. An apparatus useful for dispersing cyclopentane in an isocyanate-reactive mixture which includes a polyol having poor compatibility with cyclopentane comprising a polyol tank, a static mixer and a high pressure circulating line in which the static mixer is in the high pressure circulating line.
13. The apparatus of Claim 12 in which the polyol tank is equipped with a stirrer.
14. The apparatus of Claim 13 in which the stirrer is operated at a circumferential speed of at least 0.5 m/s.